

CLAIMS

What is claimed is:

1. A biocompatible polymer having a biodegradable or nondegradable polymeric backbone, comprising:
 - 5 a biodegradable or nondegradable polymer; and
 - choline or phospholipid moieties.
2. The biocompatible polymer of claim 1 wherein the phospholipid moieties comprise a component selected from the group consisting of phosphoryl choline, phosphoryl serine, phosphoryl inositol, di-phosphoryl glycerol, zwitterionic
10 phosphoryl ethanolamine, and combinations thereof.
3. The biocompatible polymer of claim 1 wherein the nondegradable polymer comprises monomers selected from the group consisting of methylmethacrylate (MMA), ethylmethacrylate (EMA), butylmethacrylate (BMA), 2-ethylhexylmethacrylate, laurylmethacrylate (LMA), hydroxyl ethyl methacrylate
15 (HEMA), PEG acrylate (PEGA), PEG methacrylate, 2-methacryloyloxyethylphosphorylcholine (MPC) and *n*-vinyl pyrrolidone (VP), methacrylic acid (MA), acrylic acid (AA), hydroxypropyl methacrylate (HPMA), hydroxypropylmethacrylamide, 3-trimethylsilylpropyl methacrylate (TMSPMA), and combinations thereof.
- 20 4. The biocompatible polymer of claim 1 wherein the biodegradable polymer comprises monomers selected from the group consisting of glycolide, lactide, butyrolactone, caprolactone, hydroxyalkanoate, 3-hydroxybutyrate, 4-hydroxybutyrate,

3-hydroxyvalerate, 3-hydroxyhexanoate, and combinations thereof.

5. The biocompatible polymer of claim 1 wherein the biodegradable polymer is selected from the group consisting of polyesters, polyhydroxyalkanoates (PHAs), poly(α -hydroxyacids), poly(β -hydroxyacid) such as poly(3-hydroxybutyrate) (PHB); poly(3-hydroxybutyrate-co-valerate) (PHBV), poly(3-hydroxypropionate) (PHP), poly(3-hydroxyhexanoate) (PHH), or poly(4-hydroxyacids), poly(4-hydroxybutyrate), poly(4-hydroxyvalerate), poly(4-hydroxyhexanoate), poly(hydroxyvalerate), poly(ester amides) that may optionally contain alkyl; amino acid; PEG and/or alcohol groups, polycaprolactone, polylactide, polyglycolide, poly(lactide-co-glycolide), polydioxanone (PDS), polyorthoester, polyanhydride, poly(glycolic acid-co-trimethylene carbonate), polyphosphoester polyphosphoester urethane, poly(amino acids), polycyanoacrylates, poly(trimethylene carbonate), poly(iminocarbonate), poly(tyrosine carbonates), polycarbonates, poly(tyrosine arylates), polyurethanes, copoly(ether-esters), polyalkylene oxalates, polyphosphazenes, PHA-PEG, and combinations thereof.

6. The biocompatible polymer of claim 1 wherein the nondegradable polymer is selected from the group consisting of ethylene vinyl alcohol copolymer (EVOH), polyurethanes, silicones, polyesters, polyolefins, polyisobutylene and ethylene-alphaolefin copolymers, styrene-isobutylene-styrene triblock copolymers, acrylic polymers and copolymers, vinyl halide polymers and copolymers, polyvinyl chloride, polyvinyl ethers, polyvinyl methyl ether, polyvinylidene halides, polyvinylidene fluoride, polyvinylidene chloride, polyfluoroalkenes,

polyperfluoroalkenes, polyacrylonitrile, polyvinyl ketones, polyvinyl aromatics, polystyrene, polyvinyl esters, polyvinyl acetate, copolymers of vinyl monomers with each other and olefins, ethylene-methyl methacrylate copolymers, acrylonitrile-styrene copolymers, ABS resins, and ethylene-vinyl acetate copolymers, polyamides such as

5 Nylon 66 and polycaprolactam, alkyd resins, polyoxymethylenes; polyimides; polyethers, epoxy resins, rayon, rayon-triacetate, and combinations thereof.

7. The biocompatible polymer of claim 1 further comprising a biobeneficial moiety selected from the group consisting of a non-fouling moiety, an anti-thrombogenic moiety, and a combination thereof.

10 8. The biocompatible polymer of claim 7 wherein the non-fouling moiety is selected from the group consisting of PEG, polyalkene oxides, hydroxyethylmethacrylate (HEMA), poly(n-propylmethacrylamide), sulfonated polystyrene, hyaluronic acid, poly(vinyl alcohol), poly(N-vinyl-2-pyrrolidone), sulfonated dextran, and combinations thereof; and the anti-thrombogenic moiety is

15 selected from the group consisting of heparin, salicylate (aspirin), hirudin, flavonoids, NO donor, thrombomodulin, Atrial natriuretic peptide (ANP), and combinations thereof, and combinations thereof.

9. The biocompatible polymer of claim 8 wherein heparin is attached to the polymer via a PEG spacer.

20 10. The biocompatible polymer of claim 2 further comprising a biobeneficial moiety selected from the group consisting of a non-fouling moiety, an anti-thrombogenic moiety, and a combination thereof.

11. The biocompatible polymer of claim 10 wherein the non-fouling moiety is selected from the group consisting of PEG, polyalkene oxides, hydroxyethylmethacrylate (HEMA), poly(n-propylmethacrylamide), sulfonated polystyrene, hyaluronic acid, poly(vinyl alcohol), poly(N-vinyl-2-pyrrolidone),
5 sulfonated dextran, and combinations thereof; and the anti-thrombogenic moiety is selected from the group consisting of heparin, salicylate (aspirin), hirudin, flavonoids, NO donor, thrombomodulin, Atrial natriuretic peptide (ANP), and combinations thereof, and combinations thereof.
12. The biocompatible polymer of claim 11 wherein heparin is attached to
10 the polymer via a PEG spacer.
13. The biocompatible polymer of claim 3 further comprising a biobeneficial moiety selected from the group consisting of a non-fouling moiety, an anti-thrombogenic moiety, and a combination thereof.
14. The biocompatible polymer of claim 13 wherein the non-fouling
15 moiety is selected from the group consisting of PEG, polyalkene oxides, hydroxyethylmethacrylate (HEMA), poly(n-propylmethacrylamide), sulfonated polystyrene, hyaluronic acid, poly(vinyl alcohol), poly(N-vinyl-2-pyrrolidone), sulfonated dextran, and combinations thereof; and the anti-thrombogenic moiety is selected from the group consisting of heparin, salicylate (aspirin), hirudin, flavonoids,
20 NO donor, thrombomodulin, Atrial natriuretic peptide (ANP), and combinations thereof, and combinations thereof.
15. The biocompatible polymer of claim 14 wherein heparin is attached to

the polymer via a PEG spacer.

16. The biocompatible polymer of claim 5 further comprising a biobeneficial moiety selected from the group consisting of a non-fouling moiety, an anti-thrombogenic moiety, and a combination thereof.

5 17. The biocompatible polymer of claim 16 wherein the non-fouling moiety is selected from the group consisting of PEG, polyalkene oxides, hydroxyethylmethacrylate (HEMA), poly(n-propylmethacrylamide), sulfonated polystyrene, hyaluronic acid, poly(vinyl alcohol), poly(N-vinyl-2-pyrrolidone), sulfonated dextran, and combinations thereof; and the anti-thrombogenic moiety is
10 selected from the group consisting of heparin, salicylate (aspirin), hirudin, flavonoids, NO donor, thrombomodulin, Atrial natriuretic peptide (ANP), and combinations thereof, and combinations thereof.

18. The biocompatible polymer of claim 17 wherein heparin is attached to the polymer via a PEG spacer.

15 19. The biocompatible polymer of claim 1 wherein the polymeric backbone is capable of degrading into components which are pharmacologically active and therapeutic to the process of restenosis or Sub-acute thrombosis.

20. The biocompatible polymer of claim 1 wherein the polymeric backbone is PolyAspirin™.

20 21. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 1.

22. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 2.
23. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 3.
- 5 24. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 4.
25. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 5.
26. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 6.
- 10 27. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 7.
28. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 8.
- 15 29. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 9.
30. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 10.
31. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 11.
- 20 32. An implanatable device comprising a coating that comprises the biocompatible polymer of claim 12.

33. An implantable device comprising a coating that comprises the biocompatible polymer of claim 13.
34. An implantable device comprising a coating that comprises the biocompatible polymer of claim 14.
- 5 35. An implantable device comprising a coating that comprises the biocompatible polymer of claim 15.
36. An implantable device comprising a coating that comprises the biocompatible polymer of claim 16.
37. An implantable device comprising a coating that comprises the biocompatible polymer of claim 17.
- 10 38. An implantable device comprising a coating that comprises the biocompatible polymer of claim 18.
39. An implantable device comprising a coating that comprises the biocompatible polymer of claim 19.
- 15 40. An implantable device comprising a coating that comprises the biocompatible polymer of claim 20.
41. The implantable device of claim 21 wherein the coating further comprises a biobeneficial material selected from the group consisting of a non-fouling polymer, an anti-thrombogenic polymer, and a combination thereof.
- 20 42. The implantable device of claim 22 wherein the coating further comprises a biobeneficial material selected from the group consisting of a non-fouling polymer, an anti-thrombogenic polymer, and a combination thereof.

43. The implantable device of claim 21 wherein the coating further comprises a bioactive agent.

44. The implantable device of claim 43 wherein the bioactive agent is selected from the group consisting of proteins, peptides, anti-inflammatory agents, antivirals, anticancer drugs, anticoagulant agents, free radical scavengers, steroidal anti-inflammatory agents, antibiotics, nitric oxide donors, super oxide dismutases, super oxide dismutases mimics, cytostatic agents, prodrugs thereof, co-drugs thereof, and a combination thereof.

45. The implantable device of claim 22 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

46. The implantable device of claim 23 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-

hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

47. The implantable device of claim 24 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, 5 clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co- 10 drugs thereof, and combinations thereof.

48. The implantable device of claim 25 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), 15 tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

49. The implantable device of claim 26 wherein the coating further 20 comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL),

tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, , prodrugs thereof, co-drugs thereof, and combinations thereof.

5 50. The implantable device of claim 27 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL),
10 tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

 51. The implantable device of claim 28 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone,
15 clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-
20 drugs thereof, and combinations thereof.

 52. The implantable device of claim 29 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone,

clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

53. The implantable device of claim 30 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

54. The implantable device of claim 31 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

55. The implantable device of claim 32 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL),
5 tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

56. The implantable device of claim 33 wherein the coating further
10 comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-
15 hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

57. The implantable device of claim 34 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-
20 amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-

hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

58. The implantable device of claim 35 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

59. The implantable device of claim 36 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

60. The implantable device of claim 37 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL),

tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

5 61. The implantable device of claim 38 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin
10 (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

 62. The implantable device of claim 39 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone,
15 clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-
20 drugs thereof, and combinations thereof.

 63. The implantable device of claim 40 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone,

clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

64. The implantable device of claim 41 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

65. The implantable device of claim 42 wherein the coating further comprising an agent selected from the group consisting of ABT-578, dexamethasone, clobetasol, paclitaxel, estradiol, 4-amino-2,2,6,6-tetramethylpiperidine-1-oxyl (4-amino-TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl(TEMPOL), tacrolimus, sirolimus, sirolimus derivatives, 40-*O*-(2-hydroxy)ethyl-rapamycin (EVEROLIMUS), 40-*O*-(3-hydroxy)propyl-rapamycin, 40-*O*-[2-(2-hydroxy)ethoxy]ethyl-rapamycin, and 40-*O*-tetrazole-rapamycin, prodrugs thereof, co-drugs thereof, and combinations thereof.

66. A method of treating a human being by implanting in the human being a stent as defined in claim 21,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

67. A method of treating a human being by implanting in the human being a stent as defined in claim 41,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 68. A method of treating a human being by implanting in the human being a stent as defined in claim 42,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

69. A method of treating a human being by implanting in the human being a stent as defined in claim 43,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

70. A method of treating a human being by implanting in the human being a stent as defined in claim 44,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 71. A method of treating a human being by implanting in the human being a stent as defined in claim 45,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
20 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

72. A method of treating a human being by implanting in the human being a stent as defined in claim 46,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

73. A method of treating a human being by implanting in the human being a stent as defined in claim 47,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 74. A method of treating a human being by implanting in the human being a stent as defined in claim 48,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

75. A method of treating a human being by implanting in the human being a stent as defined in claim 49,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

76. A method of treating a human being by implanting in the human being a stent as defined in claim 50,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 77. A method of treating a human being by implanting in the human being a stent as defined in claim 51,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

78. A method of treating a human being by implanting in the human being a stent as defined in claim 52,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

79. A method of treating a human being by implanting in the human being a stent as defined in claim 53,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 80. A method of treating a human being by implanting in the human being a stent as defined in claim 54,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

81. A method of treating a human being by implanting in the human being a stent as defined in claim 55,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

82. A method of treating a human being by implanting in the human being a stent as defined in claim 56,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 83. A method of treating a human being by implanting in the human being a stent as defined in claim 57,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
20 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

84. A method of treating a human being by implanting in the human being a stent as defined in claim 58,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

85. A method of treating a human being by implanting in the human being a stent as defined in claim 59,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 86. A method of treating a human being by implanting in the human being a stent as defined in claim 60,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

87. A method of treating a human being by implanting in the human being a stent as defined in claim 61,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular
5 aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

88. A method of treating a human being by implanting in the human being a stent as defined in claim 62,

10 wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

15 89. A method of treating a human being by implanting in the human being a stent as defined in claim 63,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic
20 proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

90. A method of treating a human being by implanting in the human being a stent as defined in claim 64,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

91. A method of treating a human being by implanting in the human being a stent as defined in claim 65,

wherein the disorder is selected from the group consisting of atherosclerosis, thrombosis, restenosis, hemorrhage, vascular dissection or perforation, vascular aneurysm, vulnerable plaque, chronic total occlusion, claudication, anastomotic proliferation for vein and artificial grafts, bile duct obstruction, ureter obstruction, tumor obstruction, and combinations thereof.

92. A method of preparing a phosphoryl choline (PC) containing polymer or copolymer, comprising:

forming a monomer or comonomer comprising at least one PC moiety; and polymerizing the monomer or comonomer comprising at least one PC moiety to form the PC containing polymer or copolymer.

93. A coating composition comprising the polymer of claim 1.

94. A coating composition comprising the polymer of claim 2.

95. A coating composition comprising the polymer of claim 3.

- 96. A coating composition comprising the polymer of claim 4.
- 97. A coating composition comprising the polymer of claim 5.
- 98. A coating composition comprising the polymer of claim 6.
- 99. A coating composition comprising the polymer of claim 7.